

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Dufour et al.

Group Art Unit 3722

Serial No. 10/553,277

Filed October 13, 2005

Examiner Willmon Fridie, Jr.

ANTIROTATION TOOL HOLDER
AND CUTTING INSERT

Confirmation No. 6625

DECLARATION OF X. DANIEL FANG

Pittsburgh, Pennsylvania 15222-2312
October 11, 2007

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, X. Daniel Fang, declare as follows:

1. I am a citizen of the Australia, a permanent resident of USA and currently reside at 8109 Shady Place, Brentwood, Tennessee 37027.
2. I am over the age of eighteen and am competent to make the statements in this Declaration.
3. My educational background is as follows:
 - B.Sc. in manufacturing and design, 1983, Tsinghua University, Beijing
 - M. Sc. in mechanical engineering, 1986, Tsinghua University, Beijing
 - PhD, in mechanical engineering, 1991, Univ Wollongong, Australia
 - Postdoctoral, mechanical engineering, 1991-1992, Univ Kentucky, USA

4. My history of employment including in the cutting tools industry is as follows:

Lecturer, Dept Mech. Engineering, 1992-1995, Univ Wollongong, Australia

Assistant then Associate Professor, 1995-1998, Dept Mech Eng., Iowa State University

Senior Engineer/Project Manager in Geometry Design, 1998-present, ATI Stellram, Tennessee, USA

Through my education and my employment at ATI Stellram I have gained substantial experience and familiarity with techniques used for manufacturing cutting tool components and cutting tool inserts. I have particular knowledge of and experience with machining techniques and other techniques used to form cutting insert pockets and other features on cutting tool holders. In addition, I have published about 30 technical articles regarding cutting tools and machining technologies at the level of international journals during the period of my education and employment.

5. I am named as an inventor on the above-identified U.S. patent application.

6. I have thoroughly reviewed U.S. Patent No. 6,164,878 issued to Satran ("Satran") and have carefully considered the cutting tool holders described and depicted in that patent. In particular, I have carefully considered the cutting tool holder and the cutting insert pocket (numbered 52) depicted in Figures 4 and 5 of Satran.

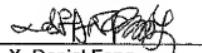
7. I conclude that the cutting insert pocket (52) depicted in Figure 4 of Satran could not be fully formed by tangential milling, whether using an end milling tool with a ballnose or an end milling tool having a straight edge without a nose. I reach this conclusion because the insert pocket (52) includes curved and recessed surfaces, for example lateral surface (74), that extend in a direction that is not parallel or tangent to the bottom surface (54) of the insert pocket. Instead, the several curved and recessed surfaces in the insert pocket (52) extend in a direction that is normal to the bottom

surface (54) of the insert pocket (52). Therefore, the curved and recessed surfaces included in the insert pocket (52) of Satran would have to be shaped using a milling tool that is advanced into the workpiece along an axis that is generally perpendicular to the bottom surface (54), which is an axial milling technique. Axial milling fundamentally differs from tangential milling, wherein the milling tool advances into the workpiece and machines the insert pocket in a direction that is generally parallel or tangent to the pocket's bottom surface.

8. My conclusions in above paragraph 7 are further confirmed by Figure 5 of Satran, which is a section through the insert pocket (52) shown in Figure 4, taken generally parallel to the bottom surface of the pocket. Figure 5 shows the shapes of two of the curved and recessed surfaces, one recessed in walls (56,58), and other recessed in wall (60). Those recessed surfaces have shapes that could not have been formed by tangential milling.

9. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: Oct 12, 2007


X. Daniel Fang